Maine Department of Health and Human Services
Bureau of Health
Division of Disease Control

Maine Epi-Gram

October 2004

The purpose of the Epi-Gram is to distribute timely and science-based information to guide Maine's healthcare professionals in issues of public health and infectious disease importance and to promote statewide infectious disease surveillance.

Advancing HIV prevention through routine HIV screening

In 2003, the Centers for Disease Control and Prevention (CDC) released a new initiative, *Advancing HIV Prevention: New Strategies for a Changing Epidemic* (click here for full text). This initiative aims to reduce barriers to early diagnosis of HIV infection and, for patients testing positive, to increase access to quality medical care, treatment and ongoing prevention services. Using four key strategies, the initiative emphasizes the use of proven public health approaches to reduce the incidence and spread of disease. One strategy of this initiative is to expand routine, voluntary human immunodeficiency virus (HIV) testing and make HIV screening a routine part of medical care.

Currently, many HIV-positive persons are undiagnosed or receive their diagnosis late in the course of their disease. These individuals do not benefit from early medical care and may unwittingly contribute to the continued transmission of HIV. Between 1998 and 2002, more than 200 people in Maine were newly diagnosed with HIV. Of these, almost half (46%) received AIDS diagnoses within one year of their first positive HIV test. Because it can take 10 years or longer for an HIV-infected person to progress to AIDS, individuals who receive AIDS diagnoses at or near the time of their initial HIV diagnosis are considered to be “late testers” who have likely lived with the virus for many years before learning of their HIV status. The vast majority of these late testers (92%) received their diagnoses in a hospital or private physician office. By offering routine HIV patient screening in these settings, the number of late diagnoses occurring in Maine would likely be reduced.

Most health care providers offer HIV testing to patients perceived to be at risk. However, CDC research has shown that many providers are uncomfortable or reluctant to discuss risk behavior with their patients, and many patients may not disclose or be aware of their own risk behaviors or those of their partners. If testing is based solely on a perception or disclosure of patient risk, some patients in need of testing may not receive it.

Routine screening of certain patient populations increases the likelihood that testing is provided to patients who need it. CDC research has shown that routine voluntary HIV screening presents an opportunity to reduce the stigma related to HIV testing; patients are not offended when testing is

presented as a policy that applies to all patients because they do not feel singled out as "at-risk." It is likely that more patients will ultimately elect to accept HIV testing when it is offered routinely, rather than when based upon risk assessments.

HIV screening is most appropriate where it is consistent with the context of the health care visit. CDC recommends that screening should occur when it is requested by a patient, is related to a behavioral or clinical risk such as substance abuse or symptoms of an STD, or is alongside other health promotion services (e.g. comprehensive health assessments, reproductive health care, or family planning).

To effectively integrate HIV screening into routine medical care, health departments, medical providers and medical care facilities must address the policy, financial and resource barriers to implementation. These groups must work collaboratively to develop an individual plan for each provider or facility to address these issues and assure linkages and resources for HIV care are in place. These HIV care services include prevention and treatment for people who test HIV-positive and prevention services for high-risk persons who test HIV-negative. Staff from the Bureau of Health HIV/STD Program are available to assist health care providers and organizations wishing to offer routine HIV screening for their patients.

Alternate strategies are necessary to help identify the estimated 25% of persons living with HIV in Maine who have not been diagnosed and assure that those who are HIV positive get early care. Incorporating HIV screening into routine medical care is an important step towards reaching this goal.

Contributed by: Bethany Sanborn and James Markiewicz

West Nile Virus Surveillance in Maine Update

Note: This update provides current data as of September 1, 2004. For the most recent information, please see the Maine Bureau of Health West Nile Virus web site at **maine.gov/dhs/boh/ddc/westnile.htm**.

Avian Surveillance- Since June 25, 2004, the Maine Bureau of Health has been receiving reports of dead corvids from throughout the state and testing selected birds. Of the 185 reported dead corvids, 143 have been crows. Dead corvids have been reported from all sixteen counties. Most of the dead corvids have been reported from Cumberland County with 45 (24%) reports, followed by York County with 26 (14%) reports and Penobscot County with 20 (10%) reports.

To date, forty-nine birds have been tested. Only one crow has tested positive for West Nile Virus. This crow, reported on August 8, 2004 was found in Standish (Cumberland County). In 2003, the first positive bird was collected on July 19 and was found in Tremont (Hancock County).

Mosquito Surveillance:

Mosquito trapping and habitat assessment are being conducted in areas throughout southern Maine, Portland, Bangor and Lewiston/Auburn. At this time, no mosquito pools have been tested. The Maine Bureau of Health plans to test pools from the Standish area due to the positive bird from this municipality.

Horse Surveillance:

To date, all horses (2) tested for West Nile Virus have been negative.

Human Surveillance:

Fifty-six individuals have been tested for West Nile virus in Maine. All clinical samples have tested negative for West Nile Virus except one individual with indeterminant results. This individual resides in a boardering state and further testing is being conducted.

Of the individuals tested, 40 report residence in Maine. York County has the largest proportion of specimens submitted with 11 (20%). The mean age is 39 years old with a range of 3 to 79 years old. Thirty (54%) are male. Twenty-two persons (39%) have reported neuroinvasive disease including aseptic meningitis and/or encephalitis. Onset dates have ranged from 6/12/04 to 8/21/04.

One individual tested positive for Powassan virus. Results have been confirmed by the Centers for Disease Control and Prevention. This case is still being investigated.

Contributed by: Jennifer Gunderman-King

Enhancing Surveillance for Influenza-Associated Pediatric Mortality

Approximately 36,000 deaths in the United States are attributable to influenza annually. Deaths in children comprise a small percentage of all influenza-associated deaths, and estimates of pediatric influenza mortality are therefore much less precise than those for adults. Limited studies indicate, however, that young children are at increased risk for hospitalization related to influenza. Serious complications of influenza in children include pneumonia, respiratory failure, nonrespiratory conditions such as shock and encephalopathy, and exacerbations of underlying chronic illness. Death associated with influenza can be directly related to the primary viral infection, or can result from a secondary complication. In certain cases, the progression from onset of illness to death can occur rapidly.

During the fall of 2003, there were several widely publicized reports of influenza-associated deaths in children. These accounts generated concern that children were disproportionately affected by influenza during the current season. In December 2003, the Centers for Disease Control and Prevention (CDC) requested that states voluntarily report influenza-associated deaths in children <18 years of age during the 2003-04 season. During October 11, 2003 - March 22, 2004, CDC received a total of 142 reports of pediatric fatalities associated with laboratory-confirmed influenza. Whether this represents an increase over baseline is unclear, since comparative data do not exist. In addition, a heightened awareness of severe complications and deaths associated with influenza and the increased availability of testing may have contributed to the identification of more influenza-associated fatalities.

Further, of these reported deaths, a significant number were two years of age or older and had no medical conditions recognized as high risk for influenza-related complications. Thus, these children were not among any groups currently targeted for influenza vaccination. Additional information is needed to further characterize those children at increased risk of influenza-related complications and deaths and to reassess current vaccination recommendations based on such information. This information could influence influenza vaccine policy by identifying specific pediatric groups at high risk for influenza-associated death or by providing data to support the expansion of pediatric age groups for targeted influenza vaccination.

Surveillance of influenza-associated pediatric deaths will serve to complement the current national influenza surveillance strategies. By including this element in the national reporting system, basic population-based epidemiologic characteristics, such as incidence, age and geographic distribution can be determined. The collection of selected clinical information could potentially describe uncommon or previously unrecognized presentations, possible risk factors, and the impact of influenza vaccination. Linkage of mortality data with virologic and other laboratory data may provide information on strain virulence and abnormal host responses, and may guide vaccine strain selection.

Influenza-associated pediatric deaths will be added to Maine's notifiable disease list when the Rules for Reporting Notifiable Diseases are amended later this year. In the interim, we request prompt notification of influenza-associated pediatric deaths.

Case Definition:

For surveillance purposes, an influenza-associated death is defined as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test. There should be no period of complete recovery between the illness and death. Influenza-associated deaths in all persons aged <18 years should be reported.

A death should not be reported if:

1. There is no laboratory confirmation of influenza virus infection.

2. The influenza illness is followed by full recovery to baseline health status prior to death.

3. The death occurs in a person 18 years or older.

4. After review and consultation there is an alternative agreed upon cause of death.

Laboratory criteria for diagnosis:

Laboratory testing for influenza virus infection may be done on pre- or post-mortem clinical specimens, and include identification of influenza A or B virus infections by a positive result by at least one of the following:

- Influenza virus isolation in tissue cell culture from respiratory specimens.

- Reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens.
- Immunofluorescent antibody staining (direct or indirect) of respiratory specimens
- Rapid influenza diagnostic testing of respiratory specimens.
- Immunohistochemical (IHC) staining for influenza viral antigens in respiratory tract tissue from autopsy specimens.
- Four-fold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera*.

As always, the Epidemiology Program greatly appreciates the efforts of Maine's medical community to report notifiable disease entities of public health significance.

*Serologic testing for influenza is available in a limited number of laboratories, and should only be considered as evidence of recent infection if a four-fold rise in influenza (HI) antibody titer is demonstrated in paired sera. Single serum samples are not interpretable.

Contributed by: Kathleen Gensheimer

Pertussis in Maine: An Epidemiologic Update

Background:

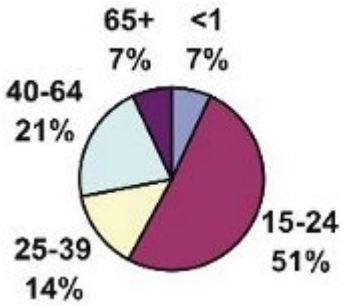
Pertussis, which is caused by the bacterial organism *Bordetella pertussis*, is a highly contagious respiratory infection that was historically one of the most common childhood infections in this country. After the widespread use of whole cell pertussis vaccine began during the 1940's, pertussis incidence decreased dramatically to a low of 2900 cases per year in the 1980's. In subsequent years, pertussis incidence began to rise steadily throughout the country. In 2002, the number of reported pertussis cases increased to the highest level seen since 1964. An increasing number of large community outbreaks have occurred in recent years, affecting predominantly middle and high school age persons. Among adolescents and adults, pertussis currently accounts for 7% of all cough illnesses within the United States.

Pertussis in Maine:

Consistent with national data, Maine continues to see an increase in pertussis cases. In 2003, 91 cases were reported, more than a 4-fold increase over the incidence in 2002. There have been 98 confirmed cases reported through August 2004, a 2.5 fold increase over the cases reported in the same time period in 2003.

Age distribution:

Ages of the 98 cases ranged from 8 weeks to 81 years, with a median of 14 years.



Of 29 cases in the vaccine eligible age group of 2 months to 7 years, 11 (39%) were never vaccinated with a pertussis containing vaccine and 4 (11%) were not vaccinated age-appropriately. The remaining 14 (50%) had an up to date vaccine status.

Diagnostic status:

Diagnosis was supported by laboratory testing in 87 cases (89%), including 62 by bacterial culture, 14 by PCR and 11 through serology (note: serologic testing is not a currently licensed procedure and is NOT recommended for use for diagnosis). The remaining 11 cases were considered to be confirmed by epidemiological linkage to laboratory confirmed cases.

Hospitalization:

Four cases were hospitalized, including two cases (50%) who were younger than 1 year of age. The two hospitalized infant cases represent 25% of all infants who were diagnosed. No deaths from pertussis were reported.

Disease outbreaks:

Disease outbreaks or clusters were associated with schools, summer camps, daycare and work site settings.

Disease investigation and control:

In order to control the further spread of the disease, the Maine Bureau of Health, Division of Disease Control, (DDC) investigates all cases and their close contacts. Pertussis case investigations resulted in recommendations for prophylactic or presumptive treatment of exposed persons in many community environments. These included exposed health workers at six Maine hospitals and other exposed employees in a number of non-medical work sites. Contact notification and investigation among school age children is especially complicated and involved the collaboration and significant time expenditure for school nurses in several school districts.

Summer presented its own challenges. Primary and secondary pertussis cases were identified in daycare and summer camp programs with both day camps and overnight camps affected. Some children attended multiple camp programs during the infectious period of the disease. The Maine Principals Association facilitated notification to athletic program participants during the summer. Several cases of pertussis were diagnosed in persons from out of state vacationing in Maine.

Discussion:

The incidence of pertussis in the United States has been gradually increasing since the early 1990's. A cyclic pattern of epidemic activity every 3 to 5 years has been observed nationally and in Maine. From 1997 to 2000 there was a dramatic increase (60%) in the proportion of Maine cases seen in adolescents and adults. Middle and high school associated pertussis outbreaks are being recognized increasingly across the country. The increase is likely to reflect both improved diagnosis and reporting and a true increase in the disease incidence. A change in the epidemiology of pertussis is consistent with the fact that pertussis immunity from vaccination begins to wane 5-15 years after the last dose of pertussis containing vaccine is administered. Adolescents with pertussis are unlikely to be hospitalized or to have severe complications. However, most infants with pertussis are exposed as a result of illness in an infected adolescent sibling or a parent. Disease control in older persons is especially important for this reason.

It should be noted that in the United States, cases of pertussis among adolescents and adults are reported most commonly during the autumn months.

The high proportion of pertussis cases occurring in unimmunized and under immunized children is a continuing concern. While Maine enjoys a relatively high vaccination rate, there are still many young children who remain susceptible to the disease because of inadequate vaccination. Young children, especially infants, are most vulnerable to severe disease complications resulting in hospitalization, and even occasionally in death.

Conclusions:

As the incidence of this disease increases, health professionals should remain informed about pertussis prevention and treatment recommendations and to consider the disease in the differential diagnosis any person with cough illness of $\geq$ 2 weeks duration. A detailed guide to pertussis clinical issues and decision making was published in a recent Epigram maine.gov/dhs/boh/ddc/June_2004.htm. Providers are encouraged to call the DDC at 1-800-821-5821 for consultation regarding diagnosis, treatment, and prophylaxis of pertussis, which is a Category 1 Notifiable Condition.

Contributed by: Jiancheng Huang and Donna Guppy

Update on the Regional Epidemiology System

The Epidemiology Program has, since its inception in 1983, conducted statewide surveillance and infectious disease control activities out of the Augusta office. Investigations, consultations and education were managed and directed through the Augusta office with occasional on-site investigations as time and personnel permitted. The need for field personnel was always recognized and desired but necessary funding and support were lacking.

In 2001, in response to public health threats including those associated with bioterrorist agents, funding was made available through the Centers for Disease Control and Prevention to establish a much needed regional public health presence in the state. In October of 2002, regional offices, located within each of 6 regions in the state, were established and staffed with full time epidemiologists, with a part time epidemiologist position dedicated to Statewide Tribal issues.

The primary focus of these positions was to establish a sensitive disease surveillance system in the respective regions so that public health threats would be quickly detected and acted upon. In the process of setting up this comprehensive system of early detection, the additional benefits to the Infectious

Disease Epidemiology Program, the Bureau of Health and to public health have been substantial.

While surveillance and preparedness is the primary focus of the Regional Epidemiologist's functions, in the process of developing this expanded and improved regional surveillance system, collaboration with other health care and community partners has resulted in establishment of networks of regional stakeholders to identify community public health needs. These networks are growing along with the regional public health system to address the unique public health needs of each region.

The Regional Epidemiology System has accomplished much since October of 2002. Investigations and recommendations related to control measures have multiplied in response to increased reporting of Notifiable Conditions (with the volume of reports doubling over the past 12 months). Data systems have been established and maintained in order to monitor and identify community health problems. Policies and plans to address those community health problems have been developed and continue to evolve. Public health hazards in the community have been identified and investigated, often in collaboration with authorities that enforce laws and regulations that protect health and ensure safety. Community partnerships have been mobilized to identify and solve health problems, including establishing linkages to personal health services and provision of health care when otherwise they were unavailable.

Training and education has been ongoing, assuring a competent public health and personal health care workforce. Effectiveness, accessibility and quality of personal and population based health services are continually evaluated.

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Febrile Illnesses During the Summer and Fall: Consider Tickborne Infections in the Differential Diagnosis

Background:

Lyme disease (LD) is the most common tickborne illness in Maine. During 2002, 219 cases of LD were reported, an increase of 100% from 2001. Significant increases of LD were also reported in Massachusetts, New Hampshire and Vermont in 2002. For 2003, the number of Maine cases dropped back to 175. This is still a greater number of cases reported than previous years, but the bottom line is that the incidence of LD has increased consistently in Maine since the mid 1990's.

In Maine, more than 2/3 of cases were from York and Cumberland counties, with a large proportion of these among residents of towns in southeastern coastal York county. Increases were also seen in midcoastal Maine, especially in Knox and Lincoln counties, but not nearly as intensive as that seen in southern Maine. Over the past decade, the range of deer ticks and LD has moved slowly and steadily into parts of eastern and central Maine.

Two other tickborne infections* occur here albeit in much smaller numbers: babesiosis and human granulocytic ehrlichiosis (HGE). For these two illnesses, early diagnosis and treatment are potentially lifesaving. In York and Cumberland counties, three cases of babesiosis have been diagnosed this summer.

** Note: a fourth tickborne disease, Powassan encephalitis, occurs rarely in Maine. It is closely-related to West Nile virus and causes a similar spectrum of illnesses.*

The Maine EpiGram last published a review of these two diseases in July 2002, but is reprinting this updated summary because of the clinical importance of early recognition. Clinicians seeing patients with unexplained febrile illnesses and history of tick bites or of outdoor exposures in tick-infested areas during the warmer months should consider these infections in the differential diagnosis. Basic laboratory studies (including CBC with peripheral smear, platelet count, and ALT level) provide valuable supportive information in screening for these illnesses. Following is a brief summary of epidemiologic and clinical features of babesiosis and HGE:

Babesiosis

Babesiosis is a malaria-like disease caused by the protozoan parasite *Babesia microti*. It is most likely to result in significant medical problems among the elderly and the immunocompromised, and especially among asplenic individuals. Like LD and HGE, it is transmitted by the bite of the deer tick and is maintained in an ecologic cycle that includes small rodent and deer populations.

Clinical Manifestations:

Most cases of babesiosis are asymptomatic and resolve spontaneously. Among those persons who become ill, onset of illness follows an incubation period of 1-4 weeks after tick bite. Principal manifestations are fever, chills, and fatigue. Additionally, patients may have severe headache, myalgias and arthralgias, and nausea and vomiting. Profuse malaria-like sweats also occur. There is no rash. The physical examination is usually unremarkable. Deaths are uncommon among persons with normal splenic function. (Note: Patients with babesiosis are often co-infected with Lyme disease. Diagnostic testing for Lyme disease should be considered in all patients with babesiosis.)

Laboratory Findings:

In clinically-ill persons, hemolytic anemia is common, and thrombocytopenia and mild elevations of ALT and AST may also occur. The diagnostic hallmark of babesiosis, however, is the presence of intraerythrocytic forms of the parasite, best seen on multiple Giemsa-stained thick and thin smears of peripheral blood. The degree of parasitemia is usually less than 10%, but may be much higher in asplenic individuals. For illnesses with clinical and epidemiologic features suggestive of babesiosis but without detectable parasitemia, indirect immunofluorescent antibody (IFA) testing can be diagnostic.

Treatment:

For persons with severe clinical illness, a course of quinine plus clindamycin or of atrovaquone plus azithromycin may be given. Other drug combinations

may also be useful. Consultation with an infectious disease specialist should be obtained.

Epidemiology:

Most of the several hundred reported cases of babesiosis in the past two decades have been reported from islands off the coast of Massachusetts (Nantucket and Martha's Vineyard) and from Long Island, N.Y, but may occur sporadically in other areas of the Northeast. Most cases have their onset during the warmer months of spring, summer, and fall. In Maine, a locally-acquired case of babesiosis was first confirmed during 2001 in a York county resident. During 2004 3 cases of babesiosis have been confirmed through August 15th. Two of these cases were diagnosed in York county residents, and one in a Cumberland county resident.

Prevention:

Preventive measures for babesiosis include the same measures for avoiding other vectorborne diseases such as Lyme disease. Given the current epidemiology of tickborne diseases in Maine, any person who lives in or enjoys outdoor recreation in the Northeastern United States needs to be aware of the risk of tickborne infections and understand and practice basic preventive measures to reduce the likelihood of becoming infected:

- Wear light colored clothing with long sleeves and pants when in a "tick habitat" during warmer months.
- Use DEET-containing insect repellants on clothing and on exposed skin when in these areas. (tick habitat = moist, shaded environment, especially areas with leaf litter and low-lying vegetation in wooded, brushy or overgrown grassy habitat) Adults should use DEET preparations up to 30%. For children under 12, preparations of 10% or less of DEET should be used. Do not apply DEET containing preparations to the face or hands of young children. Most pediatricians would not recommend using DEET on children <6 months of age.
- Removal of attached deer ticks during the first 24-36 hours prevents transmission of LD. Frequent tick checks on adult and children after venturing into tick habitat and prompt removal of ticks should be encouraged.
- In some cases, adults and adolescents who find and remove attached, engorged deer ticks may benefit from a preventive antibiotic.

Human Granulocytic Ehrlichiosis (HGE):

Ehrlichiae are small gram negative cocci, members of the Rickettsia family, that cause a number of diseases in humans and animals around the world. In the United States, canine, ruminant, and equine illnesses can result from infections with several Ehrlichia species. In humans, clinical illnesses occur in two distinct epidemiologic patterns in this country; Human Monocytic Ehrlichiosis (HME), is seen in southeastern and midwestern states. Human Granulocytic Ehrlichiosis (HGE), which is clinically very similar to HME, is seen the Northeast and in parts of the upper Midwest. The etiologic agent of HGE is *Anaplasma phagocytophilum*.

Clinical Manifestations:

After an incubation period averaging 5-10 days, most patients with HGE will have a nonspecific constitutional illness (fever, headache, malaise, myalgias) and may also experience vomiting and diarrhea, cough, confusion and arthralgias. Rash occurs rarely. Serious complications of illness (especially in untreated patients) may include seizures, encephalitis, renal failure, disseminated intravascular coagulation (DIC), and adult respiratory distress syndrome (ARDS). One-half of all diagnosed patients require hospitalization and the severity of illness is greater among immunocompromised persons. The rate of subclinical HGE infection is unknown. Most, but not all, diagnosed patients will recall a history of a tick bite, or outdoor exposures in tick-inhabited areas.

Laboratory Findings:

Basic laboratory findings suggestive of HGE include leukocytopenia, thrombocytopenia, and elevated serum aminotransferase levels. In addition, Giemsa or Diff-Quik stains of peripheral blood may identify intragranulocytic organisms. Confirmation of HGE can be challenging. Reference laboratory methods include indirect immunofluorescent assay (IFA), and serum antibody titers (IgM and IgG), which should be performed on both acute and convalescent specimens. Other methods, including DNA amplification by polymerase chain reaction (PCR), are available through some research laboratories.

Treatment:

When HGE is strongly suspected, the initiation of treatment should not be delayed for laboratory

confirmation. Doxycycline (adult dosage: 100 mg. b.i.d. for a minimum of 5-7 days and until fever has resolved and clinical improvement has been evident for at least 3 days) is the drug of choice for treatment. Fever will generally subside within 24-72 hours after treatment with a tetracycline begins, and failure to do so argues against the diagnosis of HGE.

Ecology and Epidemiology:

The agent of HGE is maintained in rodent and deer populations, and is transmitted by the bite of the deer tick (Ixodes scapularis), the same tick that transmits Lyme disease. Incidence rates of HGE are highest in states that also have high rates of Lyme disease; the greatest numbers of reported cases have come from New York, Connecticut, Wisconsin, and Minnesota. Like Lyme disease, the great majority of cases (80%) occur between April and September, with peak incidence during midsummer. In contrast to Lyme disease, case rates of HGE are highest in older adults, with most patients over age 40.

HGE in Maine:

In Maine, the first case was reported in a Franklin county resident in 2000. During 2004, one HGE case has been reported in a resident of Cumberland county.

Prevention:

HGE prevention strategies involve measures to prevent deer tick bites, as outlined for Lyme disease and babesiosis.

For more information on babesiosis go to:
cdc.gov/ncidod/dpd/parasites/babesia/

For more information on HGE go to:
cdc.gov/ncidod/dvrd/ehrlichia/

For information on Lyme disease go to:
cdc.gov/ncidod/diseases/submenus/

Contributed by: Geoff Beckett

Please call the Bureau of Health to report all reportable diseases:

Telephone Disease Reporting Line (24 hours / 7 days): 1-800-821-5821

Consultation and Inquiries (24 hours / 7 days): 1-800-821-5821

Facsimile Disease Reporting Line (24 hours / 7 days): 1-800-293-7534

Division of Disease Control Website: **www.maine.gov/dhs/boh/ddc/indexnew.htm**

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